

We Claim:

1. A biologically pure culture of a cyanobacterium strain belonging to the genus *Nostoc*, wherein the culture comprises colonies.
2. The culture according to claim 1, wherein the species is *Nostoc commune*.
3. The culture according to claim 1, wherein substantially all of the *Nostoc* colonies are of a diameter that is between about 3 mm and about 5 mm.
4. The culture according to claim 1, wherein said culture is substantially free of contaminants, wherein the contaminants are selected from the group consisting of pesticides, fungicides, insecticides and herbicides.
5. The culture according to claim 3, wherein the average diameter of said colonies are about 4 mm.
- 6.. A method of producing a biologically pure culture of a cyanobacterium strain belonging to the genus *Nostoc*, wherein said method comprises:
 - a) crushing a *Nostoc* colony to generate a crushed *Nostoc* colony,
 - b) spreading said crushed *Nostoc* colony onto an agar plate,
 - c) illuminating said agar plate containing said *Nostoc* colony with fluorescent light,
 - d) transferring said *Nostoc* colony to a fresh agar plate,to produce a biologically pure culture of *Nostoc*.
7. The method according to claim 6, further comprising
 - e) repeating step d) from 1 to 3 times
8. The method according to claim 6, wherein the culture is *Nostoc commune*.
9. A method of cultivating colonies of *Nostoc* comprising:
 - a) generating *Nostoc* hormogonia in a growth medium,
 - b) illuminating the *Nostoc* with fluorescent light,
 - c) spreading the illuminated *Nostoc* microcolonies on an agar plate to generate *Nostoc* microcolonies,cultivating the microcolonies of *Nostoc*.
10. The method according to claim 9, further comprising the steps:
 - d) transferring the microcolonies to a growth medium identical to or different from said growth medium in step a),
 - e) illuminating the microcolonies in the growth medium with fluorescent light to generate microcolonies of *Nostoc*,cultivating the microcolonies of *Nostoc*.

11. The method according to claim 9, further comprising the steps:

d) transferring the microcolonies to a growth medium identical or different to said growth medium in step a);

e) applying a fluorescent light intensity that is at least $400 \mu\text{mol photon m}^{-2}\text{s}^{-1}$ to generate macromolecules;
cultivating the macrocolonies of *Nostoc*.

12. The method according to claim 10, further comprising bubbling the microcolonies in the liquid growth medium that is identical or different from the growth medium in step a) with CO_2 .

13. The method according to claim 9, wherein the colonies are *Nostoc commune*.

14. The method according to claim 11, further comprising bubbling the microcolonies in the liquid growth medium that is identical or different from the growth medium in step a) with CO_2 .

15. The method according to claim 13, wherein at least 100 ml of the liquid growth medium is used.

16. The method according to claim 13, wherein substantially all of the macrocolonies are at least about 5 mm in diameter.

17. The method according to claim 16, wherein about 80% of the colonies are at least about 10 mm in diameter.

18. The method according to claim 10, wherein the growth medium in step d) is different.

19. The method according to claim 11, wherein the growth medium in step d) is different.

20. The method according to claim 10, wherein the growth medium in step d) is identical.

21. The method according to claim 11, wherein the growth medium in step d) is identical.

22. A composition comprising a cyanobacterium strain belonging to the genus *Nostoc*, wherein the composition comprises *Nostoc* colonies with an acceptable diluent, excipient, or carrier.

23. The composition according to claim 22, wherein the *Nostoc* is *Nostoc commune*.

24. The composition according to claim 22, wherein the *Nostoc* are substantially uniform in size and of a diameter that is between about 3 mm and about 5 mm.

25. The composition according to claim 22, wherein the composition is substantially free of contaminants, wherein the contaminants are selected from the group consisting of pesticides, fungicides, insecticides and herbicides.

26. The composition according to claim 22, wherein the composition further comprises medicine.
27. A pharmaceutical composition comprising a pharmaceutically effective amount of a cyanobacterium strain belonging to the genus *Nostoc*, wherein the composition comprises colonies along with a pharmaceutically acceptable diluent, excipient, or carrier.
28. The pharmaceutical composition according to claim 27, wherein the *Nostoc* colonies are substantially uniform and have a diameter of between about 3 mm and about 5 mm.
29. The pharmaceutical composition according to claim 27, wherein the composition comprises *Nostoc* and a medicine wherein the medicine is the pharmaceutically active ingredient.
30. The pharmaceutical composition according to claim 27, wherein the pharmaceutical composition contains *Nostoc commune*.
31. The pharmaceutical composition according to claim 30, wherein the composition comprises powdered *Nostoc commune*.
32. The pharmaceutical composition according to claim 27, wherein the composition is made by a process comprising the steps of:
- a) collecting a *Nostoc* colony from a natural source,
 - b) washing said *Nostoc* colony with a sterile medium,
 - c) crushing said *Nostoc* colony,
 - d) spreading said *Nostoc* colony onto an agar plate,
 - e) illuminating said agar plate containing said *Nostoc* colony with fluorescent light,
 - f) transferring said *Nostoc* colony to a fresh agar plate,
 - g) repeating step f) from 1 to 3 times to produce a biologically pure culture of *Nostoc*
- and combining said biologically pure culture of *Nostoc* with a pharmaceutically acceptable diluent, excipient, or carrier.
33. The pharmaceutical composition according to claim 32 wherein the *Nostoc* is *Nostoc commune*.
34. The pharmaceutical composition according to claim 27, wherein the pharmaceutical composition further comprises a medicine for treating a disorder selected from the group consisting of an anti-viral medicine, a cholesterol lowering medicine, and an anti-inflammatory medicine.
35. The pharmaceutical composition according to claim 34, wherein the medicine is selected from the group consisting of Arthrotec, Asacol, Auralgan, Azulfidine, Bextra, Celestone, Daypro, Deltasone, Diclofenac, Etodolac, Indocin, Ketoprofen, Lodine, Mobic, Nabumetone,

Naproxen, Piroxicam, Ponstan, Prednisone, Rofecoxib, Salofalk, Solumedrol, Premarin, Fosamax, Raloxifene, Tamoxifen, Tamoxifen citrate, casodex, hydrea, mercaptopurine, methotrexate lederle, and SERM's.

36. A cyanobacterial growing medium comprising water, sodium nitrate, sodium carbonate, EDTA, citric acid, ferric ammonium citrate, and manganese chloride and one or more members selected from the group consisting of magnesium sulfate, calcium chloride, dibasic potassium phosphate, cobalt nitrate, copper sulfate, sodium molybdate, boric acid, and zinc sulfate.

37. The medium according to claim 36 wherein in the medium sodium nitrate is present in an amount of from 1.5 to 2.0 g/L, sodium carbonate is present in an amount of from 0.02 to 0.05 g/L, EDTA is present in an amount of from 0.001 to 0.003 g/L, citric acid is present in an amount of from 0.006 to 0.012 g/L, ferric ammonium citrate is present in an amount of from 0.006 to 0.012 g/L, and manganese chloride is present in an amount of from 1.81 to 3.62 ppm.

38. The medium according to claim 37, wherein the medium contains one or more members selected from the group consisting of magnesium sulfate, calcium chloride, dibasic potassium phosphate, cobalt nitrate, copper sulfate, sodium molybdate, boric acid, and zinc sulfate wherein the magnesium sulfate, if present, is present in an amount of from 0.015 to 0.15 g/L, calcium chloride, if present, is present in an amount of from 0.1 to 0.54 g/L, dibasic potassium phosphate, if present, is present in an amount of from 0.01 to 0.075 g/L, cobalt nitrate, if present, is present in an amount of from 0.049 to 0.17 ppm, copper sulfate, if present, is present in an amount of from 0.079 to 0.3 ppm, sodium molybdate, if present, is present in an amount of from 0.039 to 1.2 ppm, boric acid, if present, is present in an amount of from 2.86 to 12.4 ppm, and zinc sulfate, if present, is present in an amount of from 0.05 to 0.10 ppm.

39. The medium according to claim 38, wherein the medium contains all of the members selected from the group consisting of magnesium sulfate, calcium chloride, dibasic potassium phosphate, cobalt nitrate, copper sulfate, sodium molybdate, boric acid, and zinc sulfate.

40. A bioreactor comprising three or more wheels, a frame, and one or more containers for cultivating bacteria, wherein the wheels allow the bioreactor to be moved, the wheels support the frame and the frame supports the one or more containers for cultivating bacteria and the one or more containers are made of a material that allows the passage of fluorescent light.

41. A food product comprising a biologically pure culture of a cyanobacterium strain belonging to the genus *Nostoc*.

42. The food product according to claim 41, wherein the species is *Nostoc commune*.
43. The food product according to claim 41 wherein *Nostoc* is present in an amount that is at least 50 grams.
44. The food product according to claim 42, wherein *Nostoc commune* is present in an amount that is at least 50 grams.
45. A method for promoting or enhancing health comprising administering to an individual in need of health promotion or enhancement a health promoting or enhancing amount of a composition comprising a biologically pure culture of a cyanobacterium strain belonging to the genus *Nostoc*.
46. The method according to claim 45, wherein the *Nostoc* strain is *Nostoc commune*.
47. A dietary supplement comprising a biologically pure culture of a cyanobacterium strain belonging to the genus *Nostoc*.
48. The dietary supplement of claim 47, wherein the *Nostoc* is *Nostoc commune*.
49. The dietary supplement according to claim 48, wherein the supplement is in the form of a capsule or tablet.
50. The dietary supplement according to claim 48, wherein the supplement is in a powdered form.